

Appl. No. 10/820,620
Response dated July 7, 2005
Reply to Office action dated June 8, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

WE CLAIM:

1. (original) An integrated circuit having copper interconnecting metallization protected by a first overcoat layer, portions of said metallization exposed in a window opened through the thickness of said first overcoat layer, comprising:

a patterned conductive barrier layer positioned on said exposed portion of said copper metallization and on portions of said first overcoat layer surrounding said window;

a bondable metal layer positioned on said barrier layer, the thickness of said bondable layer suitable for wire bonding; and

a second overcoat layer positioned on said first overcoat layer so that the edge of said second overcoat layer overlays the edge of said bondable layer positioned on said portions of said first overcoat layer surrounding said window.
2. (original) The circuit according to Claim 1 wherein said first overcoat thickness is from about 0.6 to 1.5 μm .
3. (original) The circuit according to Claim 1 wherein said first overcoat comprises one or more layers of silicon nitride, silicon oxynitride, silicon dioxide, silicon carbide, or other moisture-retaining compounds.
4. (original) The circuit according to Claim 1 wherein said barrier layer comprises tantalum nitride.
5. (original) The circuit according to Claim 1 wherein said barrier layer is selected from a group consisting of tantalum, titanium, tungsten, molybdenum, chromium, vanadium, alloys thereof, stacks thereof, and chemical compounds thereof.

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6. (original) The circuit according to Claim 1 wherein said barrier layer has a thickness between about 0.02 and 0.03 μm .
7. (original) The circuit according to Claim 1 wherein said bondable metal is aluminum or an aluminum alloy.
8. (original) The circuit according to Claim 1 wherein said bondable metal layer has a thickness suitable for wire bonding.
9. (original) The circuit according to Claim 8 wherein said bondable metal layer has a thickness between about 0.4 and 1.4 μm .
10. (original) The circuit according to Claim 1 further comprising a ball bond attached to said plug.
11. (original) The circuit according to Claim 1 wherein said barrier and bondable metal layers overlap between about 0.1 and 0.3 μm over said surrounding portions of said first overcoat layer.
12. (original) The circuit according to Claim 1 wherein said second overcoat comprises one or more layers of silicon nitride, silicon oxynitride, silicon dioxide, silicon carbide, or other moisture-retaining compounds.
13. (original) The circuit according to Claim 1 wherein the thickness of said second overcoat layer is approximately equal to the sum of the thicknesses of said barrier and bondable layers.
14. (original) The circuit according to Claim 1 wherein said second overcoat layer has a thickness between about 0.6 and 2.0 μm .
15. (original) The circuit according to Claim 1 wherein said overlay of said second overcoat over the edge of said bondable layer is between about 0.1 and 0.3 μm .
- 16-17. (canceled)

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18. (new) An apparatus, comprising:
- a copper bondpad over a semiconductor wafer;
 - a first overcoat layer over the semiconductor wafer with a first window region opened in the first overcoat layer, exposing an interior portion of the copper bondpad;
 - a first conductive layer, having a bondable top surface, covering the first window region and the interior portion of the copper bondpad; and
 - a second overcoat layer over the semiconductor wafer with a second window region opened in the second overcoat layer, exposing a portion of the first conductive layer.
19. (new) The apparatus of claim 18, in which the first overcoat layer is a bi-layer stack.
20. (new) The apparatus of claim 19, in which the bi-layer stack consists a silicon nitride layer and a silicon dioxide layer.
21. (new) The apparatus of claim 18, in which the second overcoat layer is a silicon oxynitride layer.
22. (new) The apparatus of claim 18, in which the second overcoat layer overlaps the second conductive layer.